

Roll No. 23 3149 300 204

Exam Code : D-24

Subject Code—62385

B.Sc. EXAMINATION

(Main/Reappear)

(Batch 2020 Onwards)

(Third Semester)

CHEMISTRY

CCL-305, Course VI

Organic Chemistry-III

(Functional Group Organic Chemistry-II)

Time : 3 Hours

Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) Why is acetic acid weaker than formic acid and chloroacetic acid is stronger than acetic acid ? Give reason. 2

(b) What acid chloride and what amine would be required to synthesize the following amides ? 2

(i) N-Methylpropanamide

(ii) N,N-dimethylbenzamide.

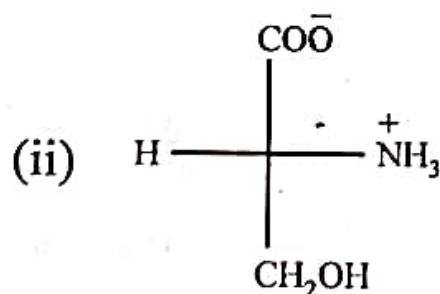
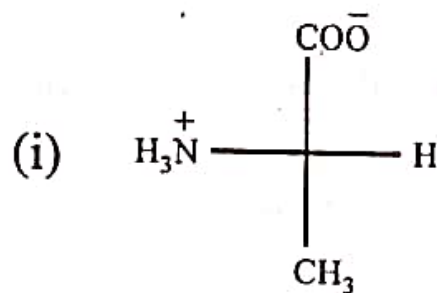
(c) Discuss the action of nitrous acid on 1° and 2° aromatic amines. 2

(d) How will you replace the diazonium group with : 2

(i) $-H$

(ii) $-OH$?

- (e) Which of the following amino acids is naturally occurring ? Name each amino acid and include its D or L designation in the name. 2



- (f) What kinds of bonds occur in the primary structure of a protein ? 2
- (g) Why sucrose is called invert sugar ? It does not reduce Tollen's reagent and Fehling solution. Explain. 2

- (h) Differentiate between anomers and epimers. 2

Unit I

2. (a) Explain the mechanism of hydrolysis of esters in acidic and basic medium. 8
- (b) Give the mechanism of Hell-Volhard Zelinsky (H V Z) reaction. 8
3. (a) Discuss the relative stabilities of carboxylic acid derivatives in detail. 8
- (b) Explain the following statements : 8
- (i) The zinc enolates can be made from only α -haloesters; they cannot be prepared from α -haloaldehydes or α -haloketones.

- (ii) In the Reformatsky reaction, magnesium cannot be used in place of zinc.

Unit II

4. (a) What is the advantage of Gabriel phthalimide synthesis over the S_N2 reaction of ammonia with alkyl halides to prepare primary amines ? 8
- (b) Write balanced chemical equation and mechanism for Hofmann carbylamine reaction. 8
5. (a) What is Hinsberg's reagent ? Using Hinsberg's reagent, how will you distinguish 1° , 2° and 3° amines ? Give reactions. 8

- (b) Write the reaction and mechanism of Hofmann bromamide reaction. 8

Unit III

6. (a) Taking suitable examples explain the preparation of α -amino acids by Strecker's synthesis. 8

- (b) Explain the C-terminal residue analysis of polypeptide by carboxypeptidase method. 8

7. (a) Write a short note on tertiary structure of proteins. With the help of a diagram represent and explain the various types of interactions responsible for the formation of tertiary structure of proteins. 8

- (b) Describe the solid phase polypeptide synthesis. What are the advantages of solid phase polypeptide synthesis over the classical solution phase polypeptide synthesis ? 8

Unit IV

8. (a) What are the limitations of open-chain structure of D-(+)-glucose. How could these be removed in actual ring structure ? Give evidence in favour of ring structure. 8

- (b) What are Disaccharides ? Indicating clearly the linkage involved, write down structures of :

- (i) Lactose
- (ii) Sucrose.

Also give their chemical names. 8

9. (a) Explain with example the detailed steps of Wohl degradation. 8

(b) What are polysaccharides ? Give four major differences between starch and cellulose. 8